

WHAT IS CLAIMED IS:

1. A motorized bicycle front derailleur assembly comprising:
a motor unit configured and arranged to rotate an output shaft in a first
rotational direction and a second rotational direction that is opposite the first
rotational direction;

a front derailleur including a fixing body, a chain guide and a
derailleur linkage operatively coupled between the fixing body and the chain
guide to move between a first shift position and a second shift position; and

a motor linkage operatively coupled to the output shaft of the motor
unit and the front derailleur linkage to move the chain guide from the first
shift position to the second shift position upon rotation of the output shaft in
the first rotational direction and move the chain guide from the second shift
position to the first shift position upon rotation of the output shaft in the
second rotational direction,

the motor linkage including a drive link configured and arranged
relative to the output shaft and the derailleur linkage to shift the chain guide
between the first shift position and the second shift position.

2. The motorized bicycle front derailleur assembly according to claim 1,
wherein

the output shaft includes an eccentric drive pin that is offset from a rotational
axis of the output shaft.

3. The motorized bicycle front derailleur assembly according to claim 2,
wherein

the drive link has a first drive link end pivotally coupled to the eccentric drive
pin.

4. The motorized bicycle front derailleur assembly according to claim 3,
wherein

the motor linkage includes a non-rigid connection that connects a second drive
link end of the drive link to the derailleur linkage.

5. The motorized bicycle front derailleur assembly according to claim 4, wherein

the non-rigid connection includes a biasing element configured and arranged to apply an urge force that normally maintains a substantially rigid connection between the drive link and the derailleur linkage.

6. The motorized bicycle front derailleur assembly according to claim 5, wherein

the front derailleur further includes a mechanical adjustment device configured and arranged to change at least one of the first and second shift positions of the chain guide relative to the fixing body.

7. The motorized bicycle front derailleur assembly according to claim 6, wherein

the mechanical adjustment device is configured and arranged to change both of the first and second shift positions of the chain guide relative to the fixing body.

8. The motorized bicycle front derailleur assembly according to claim 6, wherein

the mechanical adjustment device includes a first adjustment screw configured and arranged to change the first shift position of the chain guide relative to the fixing body.

9. The motorized bicycle front derailleur assembly according to claim 8, wherein

the mechanical adjustment device further includes a second adjustment screw configured and arranged to change the second shift position of the chain guide relative to the fixing body.

10. The motorized bicycle front derailleur assembly according to claim 1 wherein

the front derailleur further includes a mechanical adjustment device configured and arranged to change at least one of the first and second shift positions of the chain guide relative to the fixing body.

11. The motorized bicycle front derailleur assembly according to claim 10, wherein

the mechanical adjustment device is configured and arranged to change both of the first and second shift positions of the chain guide relative to the fixing body.

12. The motorized bicycle front derailleur assembly according to claim 10, wherein

the mechanical adjustment device includes a first adjustment screw configured and arranged to change the first shift position of the chain guide relative to the fixing body.

13. The motorized bicycle front derailleur assembly according to claim 12, wherein

the mechanical adjustment device further includes a second adjustment screw configured and arranged to change the second shift position of the chain guide relative to the fixing body.

14. The motorized bicycle front derailleur assembly according to claim 10, wherein

the mechanical adjustment device includes an adjustment screw threadedly coupled to one of the fixing body, the chain guide and the derailleur linkage with a free end of the adjustment screw contacting one of the fixing body, the chain guide and the derailleur linkage in which the adjustment screw is not threadedly coupled thereto.

15. The motorized bicycle front derailleur assembly according to claim 10, wherein

the mechanical adjustment device includes an adjustment screw threadedly coupled to one of the motor linkage and the derailleur linkage with a free end of the adjustment screw contacting one of the motor linkage and the derailleur linkage in which first adjustment screw is not threadedly coupled thereto.

16. The motorized bicycle front derailleur assembly according to claim 10, wherein

the output shaft includes an eccentric drive pin that is offset from a rotational axis of the output shaft.

17. The motorized bicycle front derailleur assembly according to claim 1, wherein

the motor unit further includes a motor with a driving shaft and a drive train coupled between of the driving shaft and the output shaft.

18. The motorized bicycle front derailleur assembly according to claim 1, wherein

the drive link has a first drive link end operatively coupled to the output shaft and a second drive link end with a longitudinal axis extending between the first and second drive link ends, and

the longitudinal axis of the drive link having a first orientation when the chain guide is in the first shift position and a second orientation when the chain guide is in the second shift position with the first and second orientations of the longitudinal axis of the drive link being changed less than forty five degrees.

19. The motorized bicycle front derailleur assembly according to claim 18, wherein

the output shaft includes an eccentric drive pin that is offset from a rotational axis of the output shaft.

20. The motorized bicycle front derailleur assembly according to claim 19, wherein

the motor linkage includes a non-rigid connection that connects a second drive link end of the drive link to the derailleur linkage.